



Co-funded by the
Erasmus+ Programme
of the European Union

Reframing Heritage Education in Egypt (ReHeED)

Work package 1: Surveys of Heritage Education and Gap Analysis

“Democritus University of Thrace_Department of Architectural Engineering
Laboratory of Architectural Design and Research III: Theory of Forms and Preservation
Studies_
Previous expertise on Heritage Education”

WP1 workshop
24/5/2021

DUTH team:
Professor Nikolaos Barkas
Professor Nikolaos Lianos
George Angelis
Eirini Tsetine
Loukia Angeli
Efimia Lianou
Konstantina Sidiropoulou
Diamantoula Sotirooulou

Democritus University of Thrace (DUTH),
Department of Architectural Engineering (Arch DUTH).

Arch DUTH in numbers

1999
establishment

5 years
duration of studies

10 semesters
full-time attendance

300
ECTS credits*

61
courses

44
mandatory

17
elective

50 courses
required for diploma acquisition

*studies equivalent to a Master's degree.

The Curriculum of Arch DUTH on Heritage Education.

No	Course Type	Course Title	ECTS credits	Hours /week
		1 st Semester		
1	Mandatory	HISTORY OF ARCHITECTURE AND ART I	3	4
		2 nd Semester		
2	Mandatory	HISTORY OF ARCHITECTURE AND ART II	3	4
		3 rd Semester		
3	Mandatory	HISTORY OF ARCHITECTURE AND ART III	3	4
4	Mandatory	THEORY OF FORM I – DOCUMENTATION, ANALYSIS AND PRESERVATION OF BUILDINGS AND MONUMENTS	3	4
		4 th Semester		
5	Mandatory	HISTORY OF ARCHITECTURE AND ART IV	3	4
6	Mandatory	THEORY OF FORM II – DOCUMENTATION, ANALYSIS AND PRESERVATION OF HISTORIC SITES	3	4
		5 th Semester		
7	Elective	THEORY OF FORM III – MORPHOLOGICAL ANALYSIS AND REINTEGRATION OF CONTEMPORARY BUILDINGS IN HISTORIC SITES	3	4
		7 th Semester		
8	Mandatory	RESTORATION, REDESIGN AND REVIVAL OF HISTORIC BUILDINGS AND SITES I	3	4
		8 th Semester		
9	Mandatory	THEORY OF FORM IV–MORPHOLOGICAL ANALYSIS, REINTEGRATION AND REHABILITATION OF MONUMENTS AND ARCHAEOLOGICAL SITES IN URBAN AND NON-URBAN AREAS	3	4
10	Elective	RESTORATION, REDESIGN AND REVIVAL OF HISTORIC BUILDINGS AND SITES II	3	4

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

The Laboratory, under the leadership of Professor Nikolaos Lianos, covering both educational and research needs contributes to the dissemination to students, postgraduate researchers and PhD students of the necessary **knowledge and expertise in the field of Architectural Design and Construction.**

More specifically, in the sectors of **Theory of Form, Preservation, History of Architecture** as well as systems of contemporary **methods for the documentation of historic buildings and sites**, such as **3D Laser Scanning** and **Digital Photogrammetry**.

Also, the laboratory provides the **infrastructure for the conduct of laboratory research**, which is formulated and presented not only by students and researchers via their dissertations, undergraduate thesis or postgraduate work (PhD) but also through the participation in **research projects** and **organization of workshops**.

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

i) Research Programs related to Heritage Education.

➤ **Tempus Project: “Virtual Reality in Cultural Heritage Education (VirCult)”**

VirCult was a Tempus funded project whose main objective was to establish a virtual reality academic system for Egyptian cultural heritage education and an online virtual campus targeting students, archaeologists, tourist guides and Egyptologists all over the world.

Responsibility of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies” was the **documentation and study of 11 architectural monuments** of various periods in Egypt.

The documentation was conducted using a 3D Terrestrial Laser Scanner and the digital model was used in the development of undergraduate and postgraduate educational programs.

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

Example 1: Scanning mission at the Catacombs site of Com El Shoquafa in Alexandria, Egypt.

- **Research program:** “Virtual Reality in Cultural Heritage Education (VirCult)”
- **Duration:** 6 full days, 11-16 February 2015 .



Example 1: Scanning mission at the Catacombs site of Com El Shoquafa in Alexandria, Egypt.



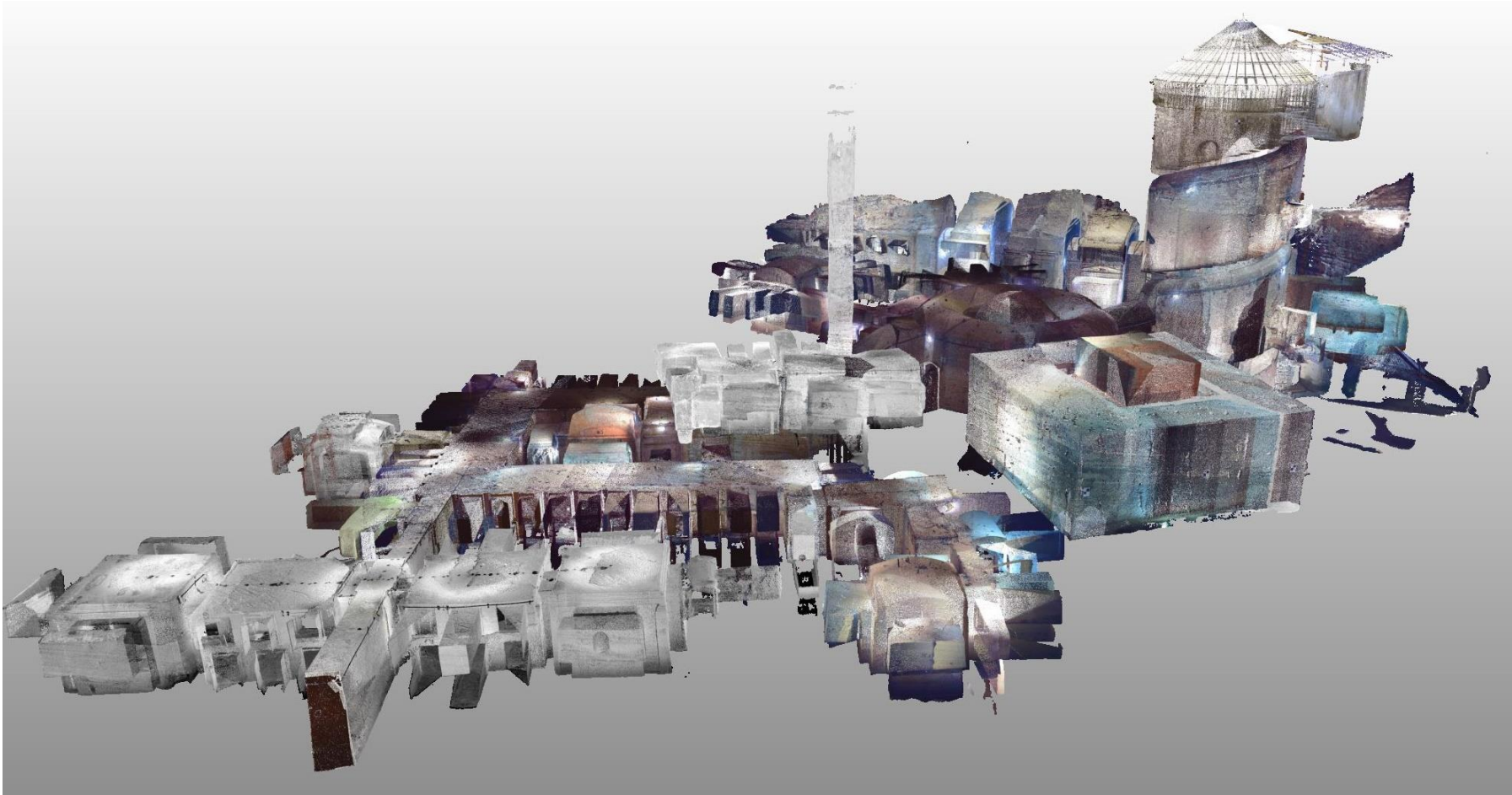
<http://www.cmauch.org/vircult-third-scanning-mission-11-16-february-2015/>

Example 1: Scanning mission at the Catacombs site of Com El Shoquafa in Alexandria, Egypt.

COM EL SHOQUAFA ' ALEXANDRIA EGYPT

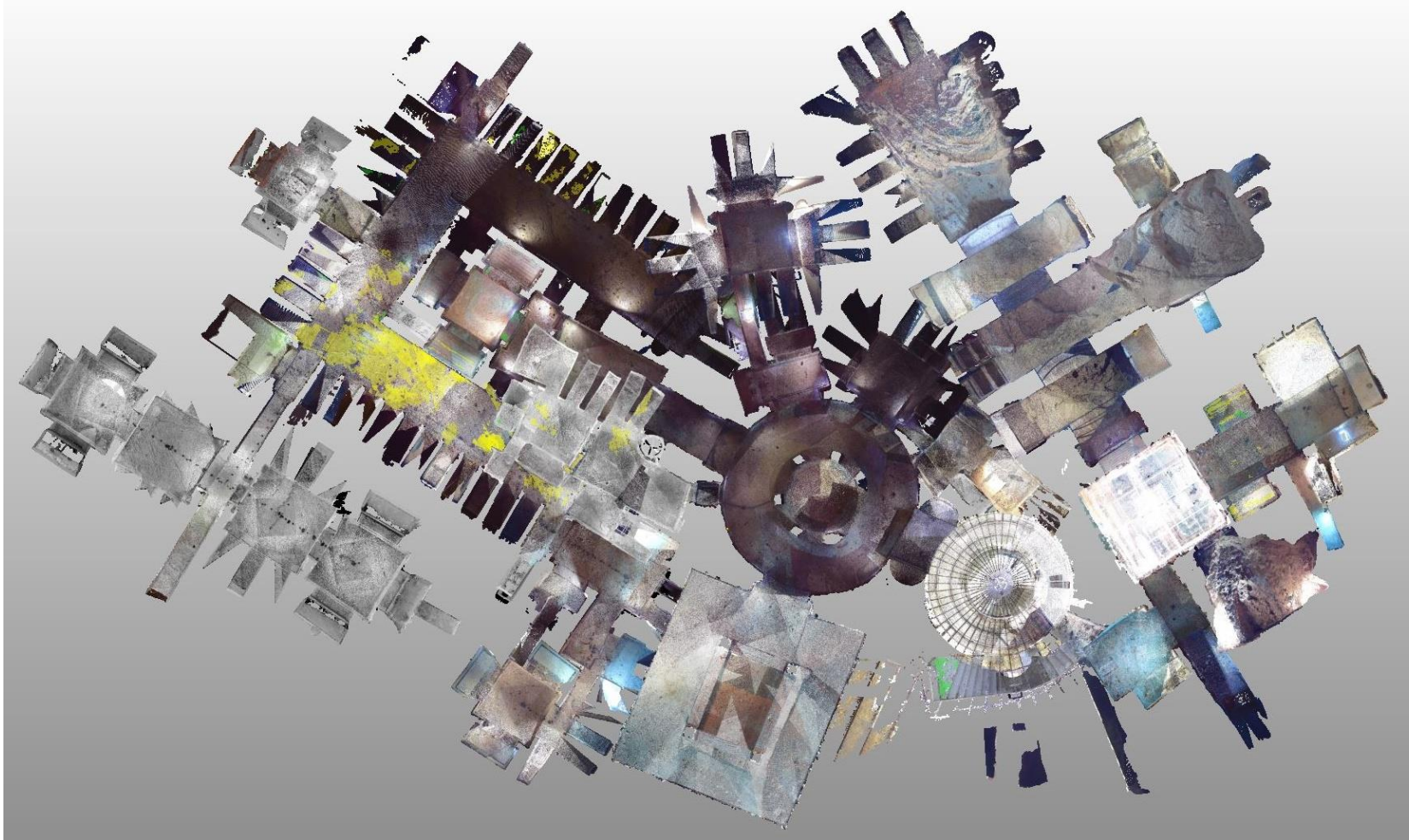


Example 1: Scanning mission at the Catacombs site of Kom Elshoqafa in Alexandria, Egypt.



Final 3D model of Catacombs site of Kom Elshoqafa in Alexandria.

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Final 3D model of Catacombs site of Kom Elshoqafa in Alexandria.

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

i) Research Programs related to Heritage Education.

➤ Erasmus + Project “Education and Capacity Building in Museum Studies (EduMust)”

Aim and Scope of this project were developing a new graduate program in museums studies which will utilize newly developed ICT-based teaching and learning tools including 3D laser scanning and virtual reality modelling.

Responsibility of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies” was the **training of the Egyptian partners** in the field of **digital documentation of monuments and artefacts** with the methods of **laser scanning** and **digital photogrammetry**.

3 workshops entitled “3D Digital Visualisation of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualisation concepts” in Egypt (2 in the Suez Museum and 1 in Alexandria) and via the **3D documentation of Suez Museum** for the creation of virtual tours.

Moreover, the Laboratory contributed to the training of Egyptian partners in the field of **Museology** via the conduct of a workshop called “**Museum Design and Rehabilitation of Archaeological Sites**”.

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts at Suez Museum.

- **Research program:** Education and Capacity Building in Museum Studies (EduMust)”
- **Duration:** 4 full days, 14-17 January 2019.



Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



The participants learn about the settings and function of 3D Faro laser scanner.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



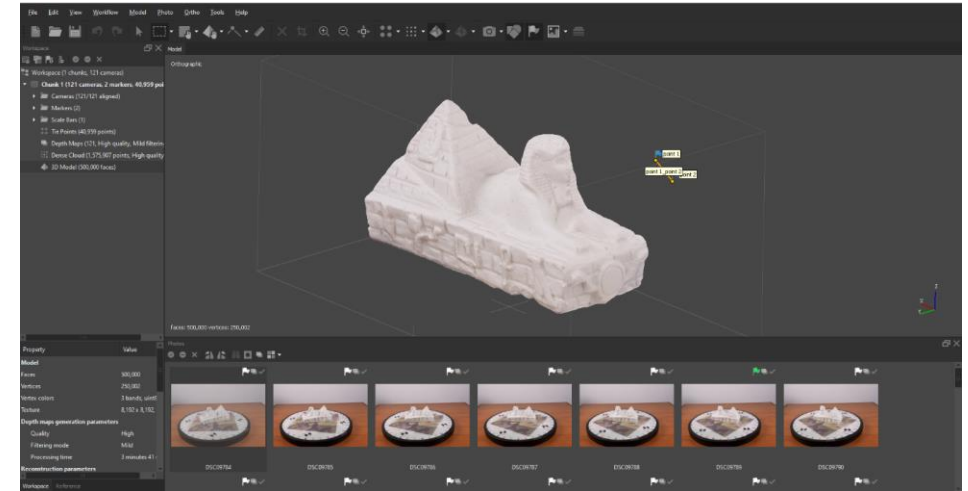
The participants learn about positioning **targets** and preparing the space for the 1st scan.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



The participants learn about correctly setting up of the photographic equipment.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



Demonstration of software, Agisoft Photoscan workflow.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



The DUTH team proceeded with the scanning of the whole museum while the participants had an active role in this process.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



Scanning the exterior space of Suez Museum.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



Final 3D model of Suez Museum.

Example 2: Workshop on 3D Digital Visualization of Artefacts and Sites with use of LIDAR, Photogrammetry and 3D Visualization concepts.



The DUTH team helped the Suez Museum staff to establish their own small-scale photogrammetry laboratory within the conservation laboratory of the museum and gave advisory assistance on the necessary equipment.

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

Example 3: Workshop “Museum Design and Rehabilitation of Archaeological Sites”.

- **Research program:** Education and Capacity Building in Museum Studies (EduMust)”
- **Duration:** 7 full days, 10-16 September 2018.



Example 3: Workshop “Museum Design and Rehabilitation of Archaeological Sites”.

The participants visited museums in Greece (Athens, Thessaloniki, Pella, Vergina, Kavala, Xanthi) and learnt about modern **museum display methods** during organised tours by professionals.



Example 3: Workshop “Museum Design and Rehabilitation of Archaeological Sites”.

Lectures on “Museum Design and Rehabilitation of Archaeological Sites” during the **one-day conference in Xanthi**.



Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

ii) Organization of Workshops related to Heritage Education.

➤ Workshops on building conservation, 2011-2014

The Laboratory has conducted a series of workshops entitled “**Theoretical and Practical Conservation of Traditional Buildings**”, in collaboration with the "Association of Letters and Arts" of Kozani, having as an area of application and study the **historic settlements of Mastorochochia**.

Workshop content:

Module 1: “Basic Concepts and Principles of Monument Protection – Restoration”

Module 2: “Documentation - Recording – Study of the traditional buildings”

Module 3: “Primary protection measures”

Module 4: “Conservation methods- stone masonry”

Module 5:” Stonemasonry conservation, traditional mortar and grout”

Module 6: “Conservation of timber structures”

Module 7: “Traditional Macedonian Architecture”, and finally

Module 8: “Restoration works, experimental construction of mud-bricks”.

Example 4: Workshop on Theoretical and Practical Conservation of Traditional Buildings.



The building that was used for the fieldwork during the workshop

Example 4: Workshop on Theoretical and Practical Conservation of Traditional Buildings.



The participants during in situ conservation activities.

Example 4: Workshop on Theoretical and Practical Conservation of Traditional Buildings.



The participants during in situ conservation activities.

Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

ii) Organization of Workshops related to Heritage Education.

➤ Workshops on digital documentation of monuments.

The Laboratory has conducted a series of workshops on “**Digital Documentation of Monuments with the use of 3D Laser Scanner**”. The first one was carried out, from 10 to 16 of May 2014, in the settlement of **Limenaria, in the island Thasos**. The second workshop was organized in the context of VirCult research program and the third one was held in **Adrianoupolis (Edirne)** in Turkey from 08 to 13 of June 2015.

The **main objective** of these workshops was to train students and professionals in the **use of new technologies**, such as **3d laser scanning** and **digital photogrammetry**, in the area of **recording and documentation** and to contribute to the **protection and conservation of monuments**.

The participants could include architects, surveyors, archaeologists, conservators of works of art, **promoting multidisciplinary collaboration in the sector of Cultural Heritage**.

Example 5: Workshop on Digital Documentation of Monuments with the use of 3D Laser Scanner" Theoretical and Practical Conservation of Traditional Buildings, at Limenaria Thassos.



3D Faro laser scanner demonstration.

Example 5: Workshop on Digital Documentation of Monuments with the use of 3D Laser Scanner" Theoretical and Practical Conservation of Traditional Buildings, at Limenaria Thassos.



The participants during fieldwork.

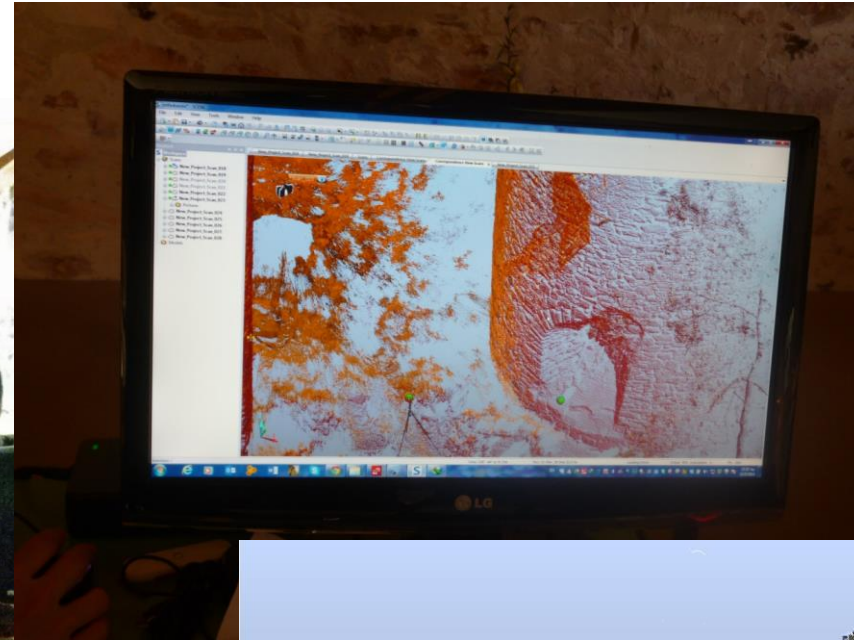
Example 5: Workshop on Digital Documentation of Monuments with the use of 3D Laser Scanner" Theoretical and Practical Conservation of Traditional Buildings, at Limenaria Thassos.



The participants during fieldwork.



Example 5: Workshop on Digital Documentation of Monuments with the use of 3D Laser Scanner" Theoretical and Practical Conservation of Traditional Buildings, at Limenaria Thassos.



The participants during desk-based analysis.

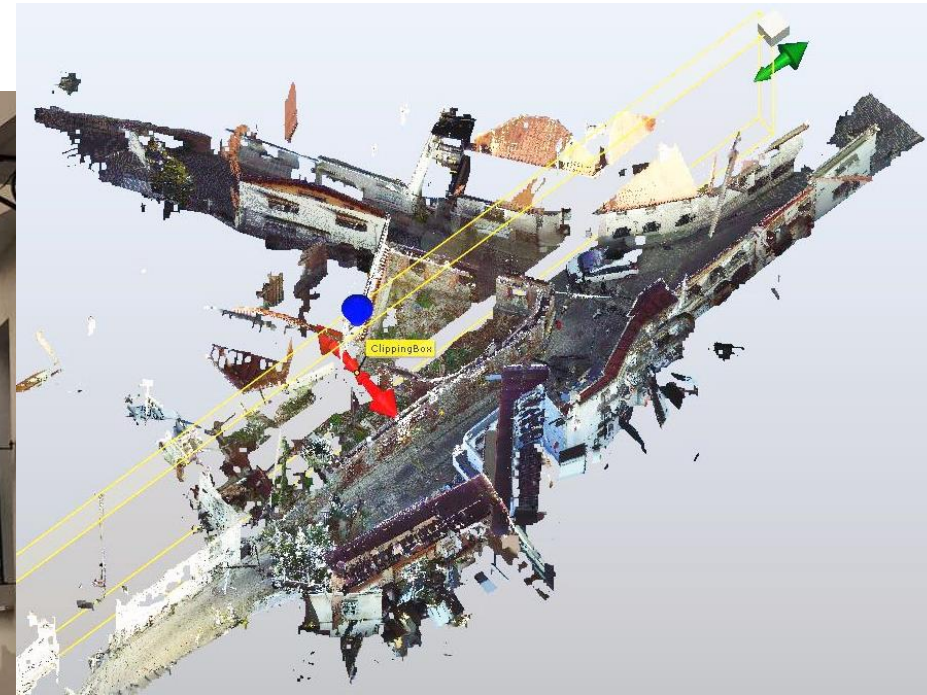
Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

iii) Implementation of digital documentation during the teaching process.

➤ Use of 3D laser scanning and digital photogrammetry.

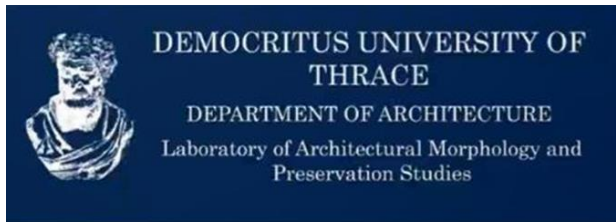
Architecture students, from Democritus University of Thrace, document an old ruined building in the Old Town of Xanthi for the purposes of the lesson Morphology- Rythmology III.

Equipment used: Faro Terrestrial Laser Scanner, drone and a common DSLR camera.



Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

Various other digital documentation projects...



Activities of the Laboratory of Morphology-Rhythmology of the Department of Architecture of the Democritus University:

Italia:

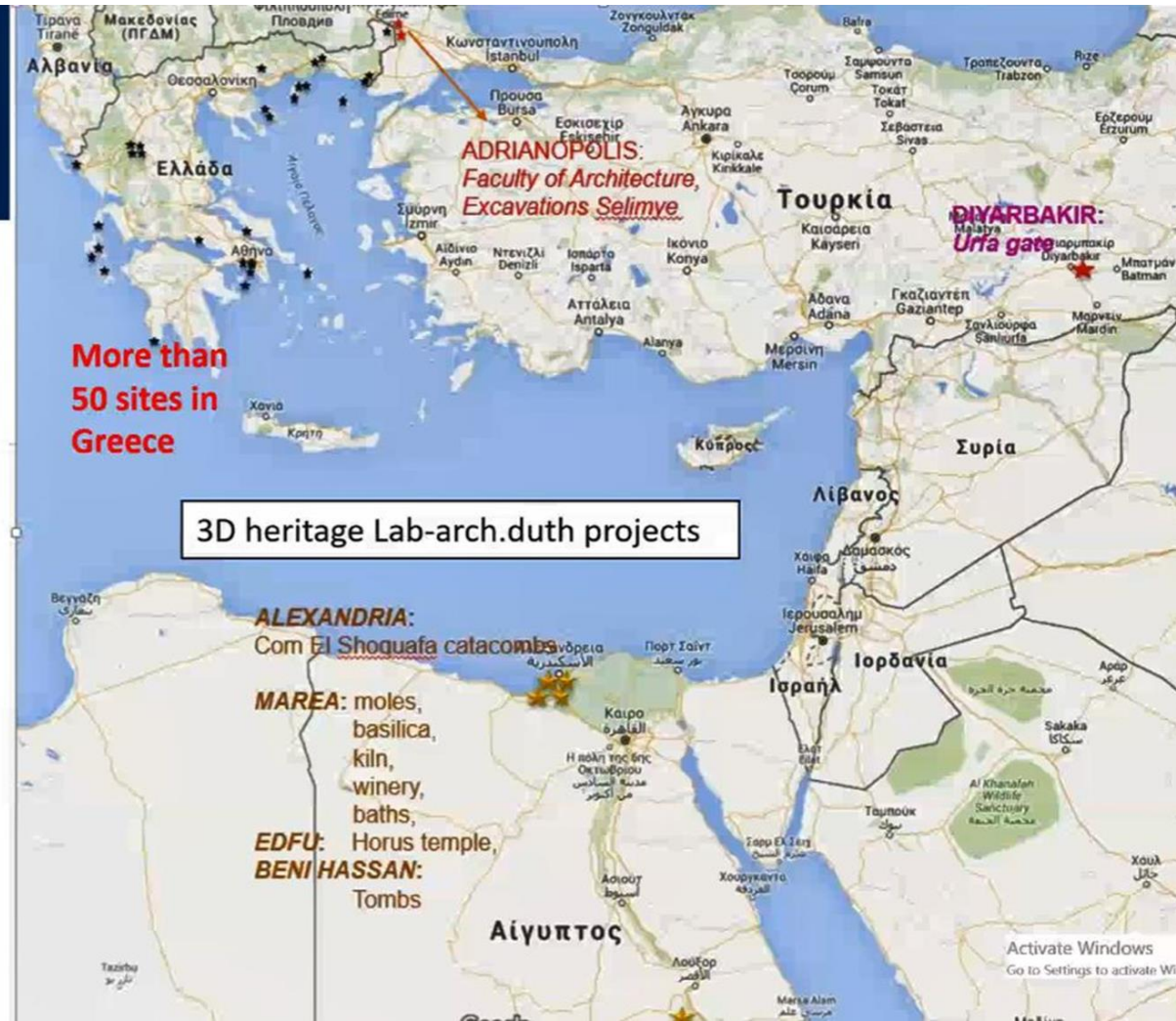
Le mura Aureliane:
Porta Pinciana, Porta Tiburtina,
Porta Maggiore, Fontana Paola,
Auditorium Mecenate.
Anfiteatro Sutri.

Turkey:

Adrianople mosque and excavations,
Barracks (Architecture School),
Roman-Byzantine walls of Diyarbakir
(Urfa Gate),

Egypt: Alexandria, Mareottis, Edfu, Beni
Hassan, El bagawat,

Greece: about 50 monuments and
archaeological sites.



Activities of the “Laboratory of Architectural Design and Research III: Theory of Forms and Preservation Studies”.

Various other digital documentation projects...



3d axonometric view

MYKHNES: lower town and royal laboratories

General plan



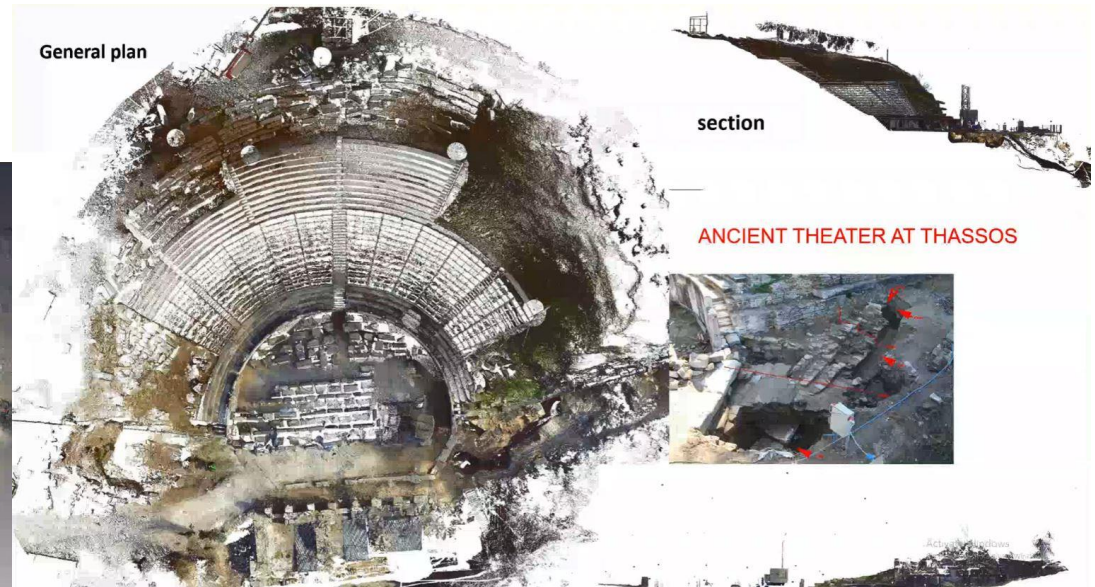
Photo: Gertrude Bell 1909



Η πύλη της URFA

Τετάρτη, 13 Ιανουαρίου 2021

A façade – section at the twin gate (URFA)
Οψοσταυή στην δίδυμη πύλη



General plan

section

ANCIENT THEATER AT THASSOS

Thassos ancient port

ANFITEATRO SUTRI



Thank you for your attention!